REMARKS

A marked-up version of the claims is enclosed at the end. Claims 1-9 are pending, and the independent claims are claims 1, 8, and 9. Please note that item 6 of the "Office Action Summary" (PTO Form 326) states that claims 1-8 are rejected, but does **not** say anything about rejecting independent claim 9. In contrast, section 7 (beginning on page 5) of the Official Action does state that claim 9 is rejected. Therefore, applicant respectfully requests clarification as to whether section 7 of the Official Action is mistaken, or alternatively whether item 6 of the "Office Action Summary" is mistaken. See MPEP § 707.

Amendment of the Specification

As required by paragraph 2 of the Official Action, the abbreviation "RVDT" is deciphered. Also, a sentence is inserted saying that, "the side cushions provide points of contact between the user's head and the headrest, and the side and rear cushions provide the only such points of contact." This is fully supported at least by the previous two sentences of the specification describing the cushions' operation when they operate together, and is also supported by Figure 5, and by lines 28-33 on page 7 of the application.

The Present Claims are Enabled by the Specification

Regarding claims 1-8, all of those claims except claim 8 are rejected under 35 USC § 112 due to lack of enablement. The Official Action states, in the sentence beginning at the bottom of page 2, that "Patent 5,792,031 does not help in understanding how moveable headrest and support will interact."

Actually, Patent #5,792,031 (hereinafter *Alton*) does not show a headrest of any sort, and the Applicant does **not** rely on *Alton* for showing how a headrest and support will interact. *Alton* was discussed in the specification of the present application (at page 6, line 13) primarily to exemplify how a "standing" user is secured by a support, and **not** to show how the present

claimed support is attached to a headrest, which is instead shown by *Helman* (U.S. Patent No. 5,791,735).

In order to explain how a moveable headrest will interact with a support on which it is mounted (as in present claim 1), this interaction is amply described in the paragraph beginning at line 26 of page 6 of the present application as originally filed, ending at page 7, line 22. That paragraph of the present specification refers extensively to *Helman* and states that present Fig. 5 is taken from *Helman*, except for the present elements 8d, 26, 28, and 30. Moreover, the *Helman* patent is "incorporated by reference" into the present application (see page 9, line 5 of the present specification).

Helman clearly shows and explains how a headrest is mounted on or with respect to a support; i.e. to a wheelchair with a mounting structure 22. The wheelchair mounting structure 22 of *Helman* is substantially the same as the support mounting structure 46 of the present invention. See column 10, lines 15-46 of *Helman* for further details about the mounting with respect to the support (especially lines 30-32 and 44-46). Also see, for example, *Helman's* abstract which says that the headrest is mounted on a wheelchair and is able to rotate. Thus, it is *Helman*, including the detailed description in *Helman's* figures, that enable this feature of the present claimed invention, rather than *Alton* patent enabling this feature.

The mounting assembly of *Helman's* Figure 2 is very similar to the present Figure 5. Therefore, Applicant respectfully submits that the present invention is fully enabled.

Amendment of Claim 1

Claim 1 is now amended to emphasize the relationship between the images and the headrest. This amendment of claim 1 is fully supported by page 4 of the application as originally filed, lines 32-34. This amendment is for clarification only, and is not intended to address any of the rejections or objections.

Claim 1 is also amended by including the limitation that the headrest comprises cushions for providing the only points of contact between the user's head and the apparatus.

This feature is supported at least by pages 7 and 8 of the present specification, which describe the cushions in detail. The present apparatus does not attach the user's head to the support, or block forward motion of the user's head. As seen in the present Figs. 5 and 6, the user's head leans on the cushions, which firmly contact the user's head. Nothing prevents the user from removing his head (for example to sneeze), and this element of freedom is in contrast to other head supports wherein the user's head is rigidly attached to the support. For example, see *Monson et al.* (U.S. Patent No. 5,267,708).

Independent Claim 1 is Not Anticipated by *Park*

The Official Action states at page 3 that claim 1 is anticipated by *Park* (U.S. Patent No. 5,695,406). However, even without the present amendments of claim 1, *Park* does not anticipate claim 1. Note that *Park* was disclosed by the Applicant in the Information Disclosure Statement (IDS) mailed on July 12, 2000. *Park* does not teach or suggest a moveable headrest for supporting head movements, as claimed by present claim 1. The non-final Official Action refers to *Park's* hood 16, but *Park's* hood 16 operates while the user's head is still, as described by *Park's* column 6, lines 48-54:

> "Neutral immersion display hood 16 produces images and sounds while the eyes of a subject positioned on relaxation chair 12 remain in a relaxed **look-ahead** mode. By requiring **only small eye movements**, neutral immersion display hood 16 maintains a subject's eyes and their associated muscles in a minimal stress state, further promoting subject relaxation and cyberspace immersion." (emphasis added)

It is true that *Park's* hood 16 is adjustable according to a subject's height (column 6, line 15), but there is nothing in *Park* to suggest that the hood 16 is adjustable while in use; i.e. while the user is executing head movements as presently claimed. The present claim 1 specifically states that the present headrest supports head movements, whereas *Park's* "small eye movements" do not need any support.

It is also true that *Park's* invention includes a motion base 14 that simulates pitch, yaw, and roll movements (column 5, lines 14-15). However, *Park's* Figure 1 shows that the motion base 14 is for allowing the chair 12 to move with respect to the floor, and is not for allowing the head 16 to move with respect to the support 12. In contrast, see the present Figures 6A-6C showing a user with a straight-ahead direction of view, and also with a leftward or rightward view. *Park's* invention does not support these types of motions enabled by the present claimed invention. Present claim 1 claims a "moveable headrest mounted on or with respect to said support," whereas *Park* does not teach or suggest a headrest moveably mounted on or with respect to *Park's* chair, for supporting head movements.

Independent Claim 8 is Not Obvious from *Park* in view of *Reichlen*

Again, the Official Action relies upon *Park* for teaching a "moveable headrest for supporting a user's head" (see penultimate paragraph on page 4 of Official Action). However, Applicant would like to again respectfully point out that *Park's* user, who is executing "only small eye movements" (column 6, lines 50-51), does not require any movable headrest support for mere eye movements. *Park* therefore does not in any way suggest a moveable headrest.

The reference to *Reichlen* (U.S. Patent No. 6,396,497) does not fill this gaping discrepancy between *Park* and the present claimed invention. *Reichlen* discloses a "head mounted display" (column 5, line 38), and thus *Reichlen* discloses no headrest at all.

Dependent Claims 3-4 are Not Obvious from *Park* in view of *Zavracky*

The present claims 3-4 depend from claim 1 which, as explained above, is not anticipated or obvious from the cited references. Thus claims 3 and 4 must be allowable too. However, applicant wishes to also emphasize that dependent claims 3-4 contain additional features which again are not really suggested by the cited references. Claims 3-4 essentially describe that the moveable headrest can be set in motion by an actuator, as opposed to being

set in motion by the user's own muscles. Applicant respectfully does not see anything like this in *Zavracky*, and submits that *Zavracky* is nonanalogous art.

The penultimate full paragraph on page 5 of the Official Action points to item 1372 in *Zavracky's* Figure 19. That paragraph of the Official Action also points to column 19, lines 28-35 of *Zavracky* which mentions nothing about an actuator or about item 1372. Therefore, the Applicant respectfully requests clarification about why the Official Action cited column 19, lines 28-35 of *Zavracky*.

With regard to *Zavracky's* actuator 1372, the actuator 1372 controls the translational movement of an optic 1358 (see column 18, lines 54-57). Aside from the significant fact that an "optic" is very different from a "headrest," applying *Zavracky's* "vertical" actuator to the present claimed headrest could result only in translational movement of the headrest, without any directional movement.

Moreover, the Official Action states that it would have been obvious to combine *Zavracky's* actuator with a moveable headrest (which *Park* does not disclose), to "enhance the virtual reality experience." But, neither *Zavracky* nor *Park* suggests why the experience would be enhanced; neither reference suggests the distinction between an active versus a passive virtual reality experience, and thus there would be no motivation to combine these references even if the combination would render the present invention obvious — which they do not.

Independent Claim 9 is Not Obvious from *Reichlen* in view of *Helman* and *Zavracky*

As stated above, it is unclear to the Applicant whether or not claim 9 was intended by the Examiner to be rejected, because item 6 of the "Office Action Summary" indicates that claim 9 was not rejected. In order to provide a full and complete response to the Official Action, the Applicant respectfully requests clarification of this point. Nevertheless, the Applicant would like to now offer a few preliminary comments regarding section 7 of the non-final Official Action, which purports to reject claim 9 as obvious from *Reichlen* in view of *Helman* and *Zavracky*.

All of these three references were cited with respect to other pending claims. Therefore, these three references have already been commented upon by the Applicant, and those comments are hereby reiterated and incorporated into Applicant's remarks with respect to claim 9.

Furthermore, section 7 of the non-final Official Action states that *Reichlen* teaches "providing an actuator command signal," but then the Official Action acknowledges that "Reichlen does not teach an actuator." Applicant respectfully submits that it would be illogical for *Reichlen* to teach an actuator command signal without teaching an actuator, and Applicant respectfully denies that *Reichlen* does so.

Also, applicant does not see any reference in *Helman* to a motor, as indicated by the non-final Official Action (page 6, second full sentence). Perhaps the non-final Official Action envisions that this "motor" is *Zavracky's* actuator? As explained above, *Zavracky's* actuator is for actuating a completely different type of component, and is for causing translational (vertical) motion without the directional motion of the present claimed invention. Furthermore, it is unclear why someone skilled in the art would have been motivated to combine these three very diverse patents (e.g. *Helman* discloses a device for neck support completely unrelated to visual images). For these reasons, withdrawal of the rejection of claim 9 is respectfully deemed appropriate.

Conclusion

Applicant would appreciate if the Examiner would please contact Applicants' attorney by telephone if that might be helpful, or if there is anything in this response that might hinder allowance. The foregoing remarks pertain to independent claims 1, 8, and 9, as well as the claims depending therefrom. Consequently, withdrawal of all the objections and rejections made in the Official Action of September 18, 2002 is respectfully requested, and early passage of rejected claims is earnestly solicited.

Respectfully submitted,

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MARKED-UP VERSION SHOWING CHANGES MADE

Please amend the application as follows:

In the Specification:

Please replace the paragraph beginning at page 9, line 26 with the following rewritten paragraph:

--Depending on the design, the display can be used actively only, passively only, or in a dual mode version either actively or passively. Fig. 5 shows a design in which the headrest assembly of Helman can be used either actively or passively. This is accomplished by providing both a motor 26 and a sensor 28 on the bracket 30 which is rigidly attached to the mounting structure 46. The shaft of the motor and sensor may be axially coupled and fixed to the arm 54 for rotating the arm 54 about the common axis of the motor and sensor. This causes rotations of the other arms 52, 56, 58, which are shown in more detail in US 5,791,735 of Helman. The motor 26 may be a stepping motor, a servo motor, or the like, for use in a passive mode of operation to actuate the headrest assembly in executing headrest movements such as illustrated in Figs 6A-6C for guiding the head 6d of the user. In that case, the sensed output signal from the sensor 26 may be unutilized (open loop control) or may be used as a feedback signal (closed loop control). An open loop control is shown in Fig. 7 with the command signal on the line 16 provided to a simple proportional amplifier that in turn provides an amplified output signal on a line 16a to the actuator 14. On the other hand, the sensor 28 may be used in an active mode of operation to sense movements of the headrest assembly such as illustrated in Figs 6-8 as actuated by the volitional movements of the user's head 6d. The sensor may be a [RVDT] rotary variable differential transformer (RVDT) or rotary potentiometer, for instance, for sensing angular displacement. A closed loop control is shown in Fig. 8 with the command signal on the line 16 provided to a summing junction where the sensed signal on the line 12 is subtracted therefrom. A difference signal is provided by the

summer to a compensator such as proportional-integral (P-I) compensator that in turn provides a compensated output signal on a line 16b to the actuator 14.—

Please insert the following paragraph at line 25 on page 8 of the application:

--The side cushions provide points of contact between the user's head and the headrest, and the side and rear cushions provide the only such points of contact.--

In the Claims:

Please amend the claims as follows:

1. Apparatus, comprising:

a support for supporting a user in viewing images in a standing, seated, or reclining posture; and

a moveable headrest mounted on or with respect to said support, for supporting a head of said user in executing head movements to view said images from a changing direction,

wherein the headrest comprises side cushions, or both rear and side cushions, for providing the only points of contact between the user's head and the headrest.